

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P908887

Luminaire Tested: DFN2DIP-PN4F0-110D120US840-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P908887  
REPORT IS A COMBINATION OF REPORTS P901288 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-110D120US840-RLLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

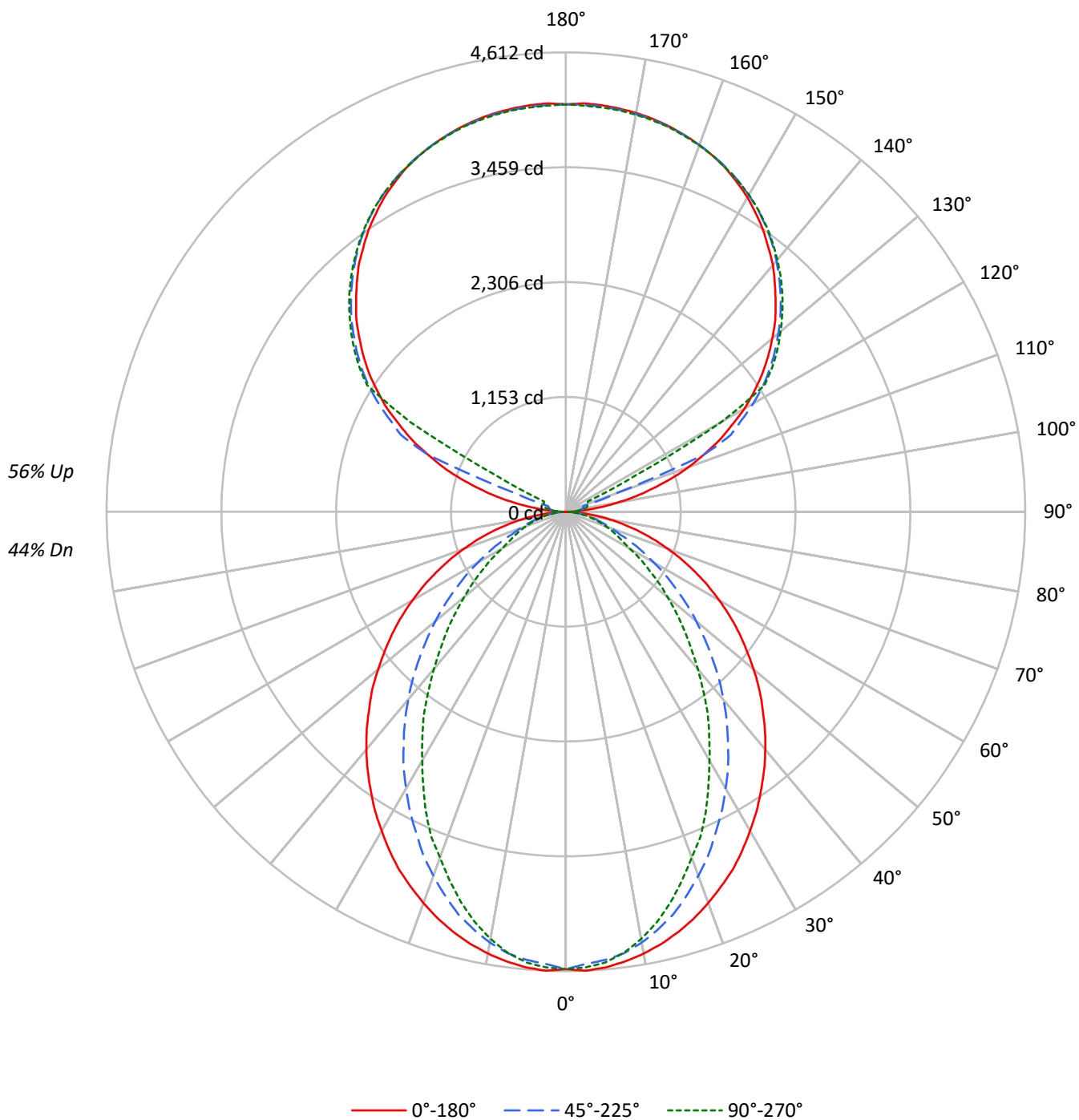
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21439.4 lumens  
Efficiency: N/A  
Efficacy: 98.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 217.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P908887

CATALOG NUMBER: DFN2DIP-PN4F0-110D120US840-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P908887

CATALOG NUMBER: DFN2DIP-PN4F0-110D120US840-RLLONL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    | 20 |
| RC  | 80  |     |     |     | 70 |    |    |    | 50 |    |    |    | 30 |    |    |    | 10 |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 65 | 65 | 65 | 51 | 51 | 51 |
| 1   | 97  | 93  | 89  | 86  | 89 | 85 | 82 | 79 | 71 | 69 | 67 | 58 | 56 | 55 | 45 | 44 | 44 |
| 2   | 89  | 81  | 76  | 71  | 81 | 75 | 70 | 66 | 62 | 59 | 56 | 51 | 49 | 46 | 40 | 39 | 37 |
| 3   | 81  | 72  | 65  | 59  | 74 | 66 | 60 | 55 | 55 | 51 | 47 | 46 | 42 | 40 | 36 | 34 | 32 |
| 4   | 74  | 64  | 56  | 51  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 41 | 37 | 34 | 33 | 30 | 28 |
| 5   | 68  | 57  | 49  | 44  | 62 | 53 | 46 | 41 | 45 | 39 | 35 | 37 | 33 | 30 | 30 | 27 | 25 |
| 6   | 63  | 51  | 44  | 38  | 58 | 48 | 41 | 36 | 40 | 35 | 31 | 33 | 29 | 26 | 27 | 24 | 22 |
| 7   | 58  | 46  | 39  | 33  | 53 | 43 | 36 | 31 | 37 | 31 | 27 | 31 | 27 | 24 | 25 | 22 | 20 |
| 8   | 54  | 42  | 35  | 30  | 50 | 39 | 33 | 28 | 33 | 28 | 24 | 28 | 24 | 21 | 23 | 20 | 18 |
| 9   | 51  | 39  | 31  | 26  | 46 | 36 | 29 | 25 | 31 | 26 | 22 | 26 | 22 | 19 | 21 | 18 | 16 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 27 | 22 | 28 | 23 | 20 | 24 | 20 | 17 | 20 | 17 | 15 |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3351 | 3351 | 3351 |
| 5°  | 3357 | 3299 | 3320 |
| 10° | 3323 | 3234 | 3212 |
| 15° | 3278 | 3128 | 3046 |
| 20° | 3217 | 2981 | 2842 |
| 25° | 3155 | 2816 | 2644 |
| 30° | 3072 | 2647 | 2393 |
| 35° | 2990 | 2465 | 2173 |
| 40° | 2907 | 2277 | 1921 |
| 45° | 2811 | 2069 | 1692 |
| 50° | 2711 | 1858 | 1468 |
| 55° | 2607 | 1632 | 1253 |
| 60° | 2487 | 1397 | 1032 |
| 65° | 2348 | 1157 | 930  |
| 70° | 2180 | 934  | 842  |
| 75° | 1969 | 824  | 768  |
| 80° | 1663 | 693  | 668  |
| 85° | 1159 | 465  | 506  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2811 cd/sqm

TEST NUMBER: P908887

CATALOG NUMBER: DFN2DIP-PN4F0-110D120US840-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 430.3   | 2.0       |
| 10°-20°   | 1181.2  | 5.5       |
| 20°-30°   | 1658.4  | 7.7       |
| 30°-40°   | 1807.8  | 8.4       |
| 40°-50°   | 1661.5  | 7.7       |
| 50°-60°   | 1304.9  | 6.1       |
| 60°-70°   | 849.4   | 4.0       |
| 70°-80°   | 437.2   | 2.0       |
| 80°-90°   | 118.8   | 0.6       |
| 90°-100°  | 134.9   | 0.6       |
| 100°-110° | 502.7   | 2.3       |
| 110°-120° | 1333.3  | 6.2       |
| 120°-130° | 2211.4  | 10.3      |
| 130°-140° | 2349.0  | 11.0      |
| 140°-150° | 2183.2  | 10.2      |
| 150°-160° | 1755.2  | 8.2       |
| 160°-170° | 1131.0  | 5.3       |
| 170°-180° | 389.3   | 1.8       |
| 0°-30°    | 3269.9  | 15.3      |
| 0°-40°    | 5077.7  | 23.7      |
| 0°-60°    | 8044.1  | 37.5      |
| 0°-90°    | 9449.4  | 44.1      |
| 90°-120°  | 1970.9  | 9.2       |
| 90°-150°  | 8714.5  | 40.6      |
| 90°-180°  | 11990.0 | 55.9      |
| 0°-180°   | 21439.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4591 | 4591  | 4591 | 4591  | 4591 |      |
| 5°   | 4591 | 4570  | 4516 | 4554  | 4541 | 435  |
| 15°  | 4367 | 4321  | 4180 | 4101  | 4060 | 1231 |
| 25°  | 3964 | 3831  | 3556 | 3386  | 3324 | 1823 |
| 35°  | 3416 | 3203  | 2838 | 2576  | 2484 | 2138 |
| 45°  | 2792 | 2514  | 2078 | 1782  | 1683 | 2156 |
| 55°  | 2123 | 1799  | 1350 | 1101  | 1022 | 1897 |
| 65°  | 1434 | 1097  | 723  | 582   | 569  | 1421 |
| 75°  | 764  | 473   | 332  | 303   | 299  | 808  |
| 85°  | 178  | 91    | 79   | 79    | 79   | 205  |
| 90°  | 3    | 35    | 59   | 74    | 80   | 20   |
| 95°  | 192  | 94    | 115  | 130   | 127  | 228  |
| 105° | 900  | 989   | 181  | 213   | 225  | 961  |
| 115° | 1702 | 1752  | 1826 | 456   | 243  | 1675 |
| 125° | 2406 | 2444  | 2501 | 2521  | 2530 | 2146 |
| 135° | 2977 | 3025  | 3051 | 3081  | 3075 | 2300 |
| 145° | 3454 | 3451  | 3501 | 3522  | 3507 | 2160 |
| 155° | 3803 | 3776  | 3812 | 3829  | 3806 | 1752 |
| 165° | 4007 | 3989  | 3998 | 4019  | 3998 | 1132 |
| 175° | 4098 | 4078  | 4084 | 4105  | 4075 | 390  |
| 180° | 4090 | 4090  | 4090 | 4090  | 4090 |      |

TEST NUMBER: P908887

CATALOG NUMBER: DFN2DIP-PN4F0-110D120US840-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4591.2 | 4591.2 | 4591.2 | 4591.2 | 4591.2 |
| 2.5°   | 4611.9 | 4591.2 | 4545.3 | 4587.2 | 4578.8 |
| 5°     | 4591.2 | 4570.4 | 4516.2 | 4553.7 | 4541.4 |
| 7.5°   | 4553.7 | 4528.9 | 4470.8 | 4487.1 | 4466.3 |
| 10°    | 4503.9 | 4474.7 | 4391.9 | 4379.1 | 4354.4 |
| 12.5°  | 4441.7 | 4404.2 | 4291.8 | 4267.1 | 4221.2 |
| 15°    | 4366.8 | 4320.9 | 4179.8 | 4101.0 | 4059.5 |
| 17.5°  | 4279.5 | 4213.0 | 4038.4 | 3947.1 | 3880.5 |
| 20°    | 4179.8 | 4096.5 | 3888.9 | 3785.3 | 3693.6 |
| 22.5°  | 4071.9 | 3976.1 | 3735.1 | 3594.0 | 3531.8 |
| 25°    | 3963.8 | 3830.7 | 3556.5 | 3386.4 | 3323.8 |
| 27.5°  | 3835.2 | 3693.6 | 3390.3 | 3195.0 | 3099.4 |
| 30°    | 3698.0 | 3539.8 | 3207.4 | 2995.8 | 2883.4 |
| 32.5°  | 3564.9 | 3373.6 | 3033.2 | 2783.8 | 2679.8 |
| 35°    | 3415.5 | 3203.4 | 2838.0 | 2576.2 | 2484.5 |
| 37.5°  | 3270.0 | 3041.2 | 2655.0 | 2368.0 | 2264.5 |
| 40°    | 3116.1 | 2867.1 | 2463.8 | 2168.8 | 2060.8 |
| 42.5°  | 2958.3 | 2692.5 | 2272.9 | 1965.2 | 1861.6 |
| 45°    | 2792.2 | 2513.6 | 2077.6 | 1782.2 | 1682.6 |
| 47.5°  | 2634.3 | 2339.5 | 1890.7 | 1595.3 | 1504.1 |
| 50°    | 2459.7 | 2164.8 | 1707.8 | 1420.8 | 1333.9 |
| 52.5°  | 2289.2 | 1977.5 | 1533.2 | 1259.0 | 1180.0 |
| 55°    | 2122.9 | 1799.0 | 1350.2 | 1101.2 | 1022.3 |
| 57.5°  | 1952.9 | 1620.4 | 1188.4 | 955.7  | 889.1  |
| 60°    | 1778.3 | 1445.9 | 1017.8 | 806.3  | 739.7  |
| 62.5°  | 1608.1 | 1275.8 | 872.4  | 673.2  | 640.1  |
| 65°    | 1433.5 | 1096.7 | 723.0  | 581.9  | 569.1  |
| 67.5°  | 1267.4 | 930.6  | 581.9  | 510.9  | 498.6  |
| 70°    | 1092.8 | 768.8  | 481.8  | 440.4  | 423.6  |
| 72.5°  | 926.6  | 618.9  | 402.9  | 369.8  | 361.4  |
| 75°    | 764.4  | 473.4  | 332.3  | 303.3  | 299.3  |
| 77.5°  | 602.6  | 336.4  | 261.9  | 245.1  | 236.7  |
| 80°    | 452.7  | 241.2  | 199.2  | 183.0  | 183.0  |
| 82.5°  | 315.6  | 162.2  | 137.1  | 128.8  | 128.8  |
| 85°    | 178.5  | 91.3   | 78.9   | 78.9   | 78.9   |
| 87.5°  | 66.6   | 33.0   | 33.0   | 29.1   | 29.1   |
| 90°    | 2.8    | 35.4   | 59.1   | 74.1   | 79.8   |
| 92.5°  | 74.1   | 62.2   | 71.0   | 77.0   | 79.8   |
| 95°    | 192.2  | 94.5   | 115.2  | 130.4  | 127.2  |
| 97.5°  | 346.2  | 103.7  | 150.8  | 159.9  | 162.7  |
| 100°   | 523.9  | 118.5  | 168.6  | 192.2  | 198.2  |
| 102.5° | 719.0  | 713.4  | 174.6  | 207.0  | 216.1  |
| 105°   | 899.6  | 988.6  | 180.7  | 213.0  | 224.9  |
| 107.5° | 1109.7 | 1183.6 | 186.6  | 218.9  | 230.9  |
| 110°   | 1311.1 | 1373.0 | 518.0  | 222.1  | 233.7  |

TEST NUMBER: P908887

CATALOG NUMBER: DFN2DIP-PN4F0-110D120US840-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1500.6 | 1553.6 | 1503.4 | 227.7  | 236.8  |
| 115°   | 1701.5 | 1751.8 | 1825.9 | 455.8  | 242.9  |
| 117.5° | 1876.2 | 1935.3 | 1985.9 | 1562.4 | 787.2  |
| 120°   | 2071.6 | 2115.9 | 2169.3 | 2204.8 | 1805.2 |
| 122.5° | 2237.2 | 2284.6 | 2344.0 | 2361.6 | 2364.7 |
| 125°   | 2405.8 | 2444.5 | 2500.7 | 2521.4 | 2530.2 |
| 127.5° | 2559.7 | 2601.2 | 2645.8 | 2675.3 | 2678.2 |
| 130°   | 2704.8 | 2752.3 | 2784.6 | 2817.3 | 2814.5 |
| 132.5° | 2852.8 | 2891.4 | 2923.8 | 2950.5 | 2947.7 |
| 135°   | 2977.2 | 3024.6 | 3051.0 | 3080.9 | 3074.9 |
| 137.5° | 3107.3 | 3142.7 | 3172.6 | 3202.1 | 3193.3 |
| 140°   | 3234.5 | 3258.3 | 3290.6 | 3317.4 | 3302.7 |
| 142.5° | 3341.2 | 3362.0 | 3400.3 | 3423.8 | 3409.1 |
| 145°   | 3453.7 | 3450.6 | 3500.8 | 3521.6 | 3506.8 |
| 147.5° | 3551.1 | 3542.3 | 3592.6 | 3607.3 | 3595.7 |
| 150°   | 3645.9 | 3625.2 | 3672.7 | 3690.3 | 3675.5 |
| 152.5° | 3725.7 | 3702.2 | 3746.5 | 3764.4 | 3743.7 |
| 155°   | 3802.6 | 3776.3 | 3811.8 | 3829.4 | 3805.9 |
| 157.5° | 3864.9 | 3841.3 | 3868.1 | 3888.8 | 3864.9 |
| 160°   | 3918.3 | 3900.4 | 3918.3 | 3935.8 | 3915.1 |
| 162.5° | 3965.4 | 3947.9 | 3962.6 | 3983.3 | 3956.7 |
| 165°   | 4006.8 | 3989.3 | 3998.1 | 4018.9 | 3998.1 |
| 167.5° | 4039.6 | 4021.6 | 4030.8 | 4051.5 | 4024.8 |
| 170°   | 4066.2 | 4048.3 | 4054.3 | 4075.0 | 4048.3 |
| 172.5° | 4083.8 | 4066.2 | 4072.3 | 4093.0 | 4066.2 |
| 175°   | 4098.5 | 4077.8 | 4083.8 | 4104.6 | 4075.0 |
| 177.5° | 4104.6 | 4083.8 | 4087.0 | 4107.7 | 4081.1 |
| 180°   | 4089.9 | 4089.9 | 4089.9 | 4089.9 | 4089.9 |

TEST NUMBER: P908887

CATALOG NUMBER: DFN2DIP-PN4F0-110D120US840-RLONL

**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 10.78            | 11.56 | 11.79 | 12.58 | 13.93 | 6.74           | 7.53  | 7.75  | 8.54  | 9.90  |
|                 | 3H   | 12.45            | 13.15 | 13.48 | 14.18 | 15.56 | 7.93           | 8.63  | 8.95  | 9.65  | 11.03 |
|                 | 4H   | 13.06            | 13.72 | 14.10 | 14.75 | 16.14 | 8.38           | 9.04  | 9.41  | 10.07 | 11.45 |
|                 | 6H   | 13.48            | 14.09 | 14.53 | 15.13 | 16.52 | 8.70           | 9.31  | 9.74  | 10.34 | 11.74 |
|                 | 8H   | 13.61            | 14.19 | 14.66 | 15.24 | 16.63 | 8.79           | 9.37  | 9.84  | 10.42 | 11.81 |
|                 | 12H  | 13.67            | 14.22 | 14.73 | 15.27 | 16.68 | 8.83           | 9.38  | 9.88  | 10.42 | 11.84 |
| 4H              | 2H   | 10.79            | 11.45 | 11.83 | 12.48 | 13.87 | 7.33           | 8.00  | 8.37  | 9.03  | 10.41 |
|                 | 3H   | 12.62            | 13.17 | 13.67 | 14.23 | 15.62 | 8.68           | 9.23  | 9.73  | 10.29 | 11.69 |
|                 | 4H   | 13.31            | 13.81 | 14.37 | 14.86 | 16.28 | 9.23           | 9.73  | 10.28 | 10.78 | 12.20 |
|                 | 6H   | 13.83            | 14.26 | 14.89 | 15.33 | 16.75 | 9.64           | 10.08 | 10.71 | 11.15 | 12.56 |
|                 | 8H   | 14.00            | 14.41 | 15.07 | 15.47 | 16.90 | 9.77           | 10.18 | 10.84 | 11.24 | 12.67 |
|                 | 12H  | 14.10            | 14.46 | 15.18 | 15.54 | 16.97 | 9.84           | 10.20 | 10.92 | 11.28 | 12.72 |
| 8H              | 4H   | 13.27            | 13.68 | 14.34 | 14.74 | 16.17 | 9.50           | 9.91  | 10.57 | 10.97 | 12.40 |
|                 | 6H   | 13.84            | 14.18 | 14.93 | 15.28 | 16.71 | 10.02          | 10.36 | 11.11 | 11.46 | 12.89 |
|                 | 8H   | 14.06            | 14.35 | 15.16 | 15.44 | 16.89 | 10.22          | 10.51 | 11.31 | 11.60 | 13.04 |
|                 | 12H  | 14.20            | 14.46 | 15.30 | 15.54 | 17.03 | 10.33          | 10.59 | 11.43 | 11.68 | 13.16 |
| 12H             | 4H   | 13.22            | 13.59 | 14.31 | 14.67 | 16.10 | 9.51           | 9.87  | 10.59 | 10.95 | 12.39 |
|                 | 6H   | 13.82            | 14.11 | 14.91 | 15.20 | 16.65 | 10.07          | 10.37 | 11.17 | 11.46 | 12.90 |
|                 | 8H   | 14.04            | 14.30 | 15.14 | 15.38 | 16.87 | 10.28          | 10.54 | 11.38 | 11.63 | 13.11 |

END OF REPORT